

## Procedures for the use of the SLI Guidelines

1. Use the Communication Scales' matrices to rate the student's communication in all areas. Identify and circle the scores in each row of a scale. Since scores in each row contribute to the total score, it is necessary to determine a score for each individual subscale. For example, sound production, formal assessment, stimulability, intelligibility, oral motor structure and function, and adverse effect on educational performance/communication are all weighted in importance in the determination of a disability. Do not alter these weighted scores. For example, do not score intelligibility as a "7" or stimulability as a "2.5".

**No zeros (0) are to be used on these scales. No 2-3 or 3-4 ratings shall be used.**

2. The following scales would be used for students who are served under IDEA Part B (3-21 years):
  - a. Receptive Language Rating Scale
  - b. Expressive Language Rating Scale
  - c. Pragmatics Social Language Rating Scale
  - d. Articulation Rating Scale
  - e. Stuttering Rating Scale
  - f. Voice Rating Scale
3. The following scales would be used for students/children, birth – 3 years of age.
  - a. Birth-3 Communication Rating Scale: On this scale, rate the results of normative assessments (if administered); the observational data on language complexity, vocabulary and evidence of word finding issues (determined using language scales, developmental inventory checklists, language samples, or other observational means); the child's performance as per age-level developmental expectations; and, adverse effect on communication.
  - b. Articulation Rating Scale
  - c. Stuttering Rating Scale
  - d. Voice Rating Scale
4. All of the individual ratings of the subscales should be used to determine the final overall rating. For children who are being evaluated for Part C services, the ratings are based on the Part C State Plan's criteria for significant delay. The final rating will be based on the presence of one or more of the following ratings:

	Part B students	Part C children
Rating of 1 =	1 (Within Normal Limits)	1 (Within Normal Limits)
Rating of 2 =	2 (Mild)	2 (Mild Delay)
Ratings of 3 =	3 (Moderate)	3 (Significant Delay)
Ratings of 4 =	4 (Severe)	4 (Significant Delay)

5. The overall rating is used to determine eligibility for speech-language services.  
Overall Rating of 1: Within Normal Limits  
Overall Rating of 2: Mild Impairment for Part B students or Mild Delay for Part C children  
Overall Ratings of 3 or 4: Impairment is present for Part B students or a Significant Delay is present for Part C children
6. Under Part B, students with overall ratings of 3 or 4 may be eligible for speech or language services. The model of service delivery should be based on the needs of the student, ensuring the least restrictive environment, access to the general education curriculum and/or appropriate age-related activities, and reasonable educational benefit from services. Under Part C, early intervention is indicated if a child is determined eligible by the Community Centered Board (CCB) based on the state's criteria for a significant developmental delay.
7. Individual Administrative Units (AUs) may have unique guidelines regarding eligibility for services for students.

#### Variance in Determining the Overall Rating

During the evaluation process the SLP determines the Overall Rating based on assessment results and the Rating Scales. At the eligibility meeting, the SLP, in collaboration with the Multidisciplinary Team, may use professional judgment to add or subtract one rating point from the Overall Rating. The Multidisciplinary Team may consider the following: student attendance, cognition, rate of progress, response to interventions, cultural and linguistic differences, or other environmental or neurological factors. The use of the variance should be considered only during the eligibility meeting so that all team members are able to discuss the factors involved. Multidisciplinary Team discussion and any changes in the Overall Rating must be documented within the IEP and in the Prior Written Notice.

# ARTICULATION/PHONOLOGY RATING SCALE<sup>1</sup>

STUDENT: \_\_\_\_\_ SLP: \_\_\_\_\_ DATE: \_\_\_\_\_

Normative Assessment of Articulation/Phonology: Comprehensive, standardized measure(s) and scores.  PERCENTILE SCORES ARE NOT TO BE USED WITH THE GFTA-2.	SCORE = 1	SCORE = 2	SCORE = 3	SCORE = 4
	1 standard deviation from the mean  for example: Standard Score (SS) = 85 when the mean is 100 and the standard deviation is 15	>1.0 - 1.5 standard deviations from the mean  for example: Standard Score (SS) = 84-78 when the mean is 100 and the standard deviation is 15	>1.5 – 2.0 standard deviations from the mean  for example: Standard Score (SS) = 77-70 when the mean is 100 and the standard deviation is 15	>2.0 standard deviations from the mean  for example: Standard Score (SS) = 69 or below when the mean is 100 and the standard deviation is 15
Observational Assessment of Articulation:  <i>Check descriptive tool used:</i> _ Speech sample _ Checklist(s) _ Observations _ Other _____  <i>The lists are possible suggestions and are NOT intended to be all-inclusive lists.</i>	1	2	3	4
	Production of speech is Within Normal Limits in all educational settings. Errors are consistent with normal development.	Speech sound errors are present and occasionally interfere with communication.	Sound productions are noticeably in error and may include one or more of the following:  <input type="checkbox"/> Non-developmental or early appearing phonological patterns may be present. <input type="checkbox"/> Sound errors are not found in age-matched peers who are members of the same speech community <input type="checkbox"/> Substitutions <input type="checkbox"/> Distortions <input type="checkbox"/> May use compensatory or non-developmental speech patterns.	Deviation may range from extensive substitutions and many omissions to extensive omissions.  Extensive non-developmental errors include: <input type="checkbox"/> substitutions, <input type="checkbox"/> omissions, <input type="checkbox"/> distortions <input type="checkbox"/> phonological patterns

<sup>1</sup> Please refer to the accompanying documents entitled, *Articulation and Phonological Development in Early Childhood* or *Articulation and Phonological Developmental Considerations*, contributed by Kathy Fahey, Ph.D., for information on age-level expectations of the emergence and mastery of speech sounds as well as for information on the expected ages of suppression of phonological processes.

## ARTICULATION/PHONOLOGY RATING SCALE

**STUDENT:** \_\_\_\_\_ **SLP:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

<b>Intelligibility: Based on percentage of consonants correct</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>																
<b>Part B Students</b>	Intelligibility is Within Normal Limits (judged to be 95-100%)	Speech is intelligible (judged to be 85-94%) even when listener and/or context is unfamiliar.	Speech is frequently unintelligible (judged to be 65-84%) when listener and/or context is unfamiliar.	Speech is consistently unintelligible (judged to be below 65%) when listener and/or context is familiar.																
<b>Birth THROUGH 3</b>	<p>For children ages 0 THROUGH 3, use the following norms to determine scale score.</p> <p>If the child's intelligibility fits within the expected range, score a 1 ; if the intelligibility is less than the range indicated in the chart, score a 3 for this factor.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"></td> <td style="width: 30%; text-align: center;">Familiar listeners</td> <td style="width: 30%; text-align: center;">Unfamiliar listeners</td> <td style="width: 30%;"></td> </tr> <tr> <td>2:0</td> <td style="text-align: center;">parents 87%</td> <td style="text-align: center;">strangers 50%</td> <td></td> </tr> <tr> <td>2:6</td> <td style="text-align: center;">51-70%</td> <td></td> <td></td> </tr> <tr> <td>3:0</td> <td style="text-align: center;">71-80%</td> <td style="text-align: center;">75%</td> <td style="text-align: center;">reliable transcription 95.7%</td> </tr> </table>					Familiar listeners	Unfamiliar listeners		2:0	parents 87%	strangers 50%		2:6	51-70%			3:0	71-80%	75%	reliable transcription 95.7%
	Familiar listeners	Unfamiliar listeners																		
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3:0	71-80%	75%	reliable transcription 95.7%																	
<b>Consistency, Stimulability and Self-correction:</b> Judgments are based on the student's performance as compared to developmental expectations.  NOTE: Ability to self-correct should NOT be considered for children ages 0 THROUGH 3.	<b>1</b>  Consistent sound patterns  Stimulable for all sounds within the developmental norms.	<b>2</b>  Minor inconsistencies in sound production  Stimulable for error sound/s in at least one context within the developmental norms.  Frequent self-corrections noted.	<b>3</b>  Frequent inconsistencies in sound production  Limited stimulability for error sound/s within the developmental norms.  Ability to self-correct is inconsistent.	<b>4</b>  Consistent error patterns  Not stimuable for error sound/s within the developmental norms.  No self-corrections noted.																

<b>Oral Motor Structure and Function:</b>	<b>1</b>  Oral structures appear normal and adequate for speech production.	<b>2</b>  Minimal difficulties in oral motor and/or sequencing do not interfere with speech production.	<b>3</b>  Frequent difficulties in timing, sequencing and/or coordination of speech sound/s are evident.	<b>4</b>  Consistent difficulties in timing, sequencing and/or coordination of speech sound/s are evident. There may be additional neuromotor and/or structural deficits present.
<b>Adverse Effect on Educational Performance: (Part B Students)</b>	<b>1</b>  Speech is adequate for the student's participation in educational settings.	<b>4</b>  Speech sound/s are developing. Speech errors minimally impact the student's participation in educational settings.	<b>6</b>  Speech error/s frequently impact student's participation in educational settings.	<b>8</b>  Speech error/s consistently impact student's participation in educational settings.
<b>Adverse Effect on Communication: Birth through 3</b>	<b>1</b>  Speech is adequate for the student's participation in appropriate age-related activities and settings.	<b>4</b>  Speech sound/s are developing. Speech errors minimally impact the student's participation in appropriate age-related activities and settings.	<b>6</b>  Speech error/s frequently impact student's participation in appropriate age-related activities and settings.	<b>8</b>  Speech error/s consistently impact student's participation in appropriate age-related activities and settings.

## ARTICULATION/PHONOLOGY RATING SCALE

STUDENT: \_\_\_\_\_ SLP: \_\_\_\_\_ DATE: \_\_\_\_\_

### Instructions:

1. Circle score for the most appropriate description for each category: *Normative (Standardized), Observational (Descriptive), Intelligibility, Oral Motor/Structure and Function, Stimulability/Self-Correction and Adverse Effects.*
2. Compute the total score.
3. Circle below to determine the Overall Rating.

TOTAL SCORE \_\_\_\_\_

**COMPREHENSIVE ARTICULATION/PHONOLOGY ASSESSMENT TOTAL SCORE:** *Normative (Standardized); Observational Assessment; Intelligibility, Stimulability and Self-Correction; Oral Motor Structure and Function; and Adverse Effect*

_____ 6 _____	/ 7 8 9 10 11 12 13 14 / 15 16 17 18 19 20 21 / 22 23 24 25 26 27 28
No Impairment /	Mild (Mild Delay - Pt C) / Moderate (Sign. Delay - Pt C) / Severe (Significant Delay - Pt C)
Rating = 1	Rating = 2 Rating = 3 Rating = 4

OR

**OBSERVATIONAL ASSESSMENT ONLY - ARTICULATION/PHONOLOGY ASSESSMENT TOTAL SCORE:** *Observational Assessment; Intelligibility; Consistency, Stimulability and Self-Correction; Oral Motor Structure and Function; and Adverse Effect*

_____ 5 _____	/ 6 7 8 9 10 11 12 / 13 14 15 16 17 18 / 19 20 21 22 23 24
No Impairment /	Mild (Mild Delay - Pt C) / Moderate (Sign. Delay - Pt C) / Severe (Significant Delay - Pt C)
Rating = 1	Rating = 2 Rating = 3 Rating = 4

**Final determination of disability is made by the Multidisciplinary Team.**

## Articulation and Phonological Development in Early Childhood

The information is intended to provide speech-language pathologists and other professionals in early childhood developmental information about the sound system. Several factors should be taken into consideration when using developmental information to make decisions about the progress toddlers and preschoolers are making in language acquisition. Factors include chronological age, developmental age, motor development, opportunities in the child's environment for the development of spoken language, and the cultural and linguistic background. Factors also create variability among children and should be considered when comparing an individual child's performance to normative data. Overall maturity, overall linguistic development, medical history including middle ear infections, psychological makeup, environmental conditions, and the child's own pattern of development.

Recommended Acquisition (Mastery 90% of Population) of Sound Classes (ages 3 to 8)  
(Based on Smit, Hand, Freilinger, Bernthal, & Bird, 1990; Sander, 1972; McLeod, van Doorm & Reid, 2001))

The following information is the ages at which 90% of children have productive use of the sounds in words. Each of these phonemes emerges\* earlier than these reported ages.

### *Vowels*

English vowels emerge very early and complete mastery is typical by age 3:0 including the central /r/-colored /ə/ and diphthongs.

### *Nasals*

/m/	3:0 /n/ 3:6 female; 3:0 male	<i>Emergence*</i> before 2:0
/ŋ/	7:0-9:0	2:0

### *Stops*

/p, b/	3:0	before 2:0
/t/	4:0 female; 3:6 male	2:0
/d/	3:0 female; 3:6 male	2:0
/k/	3:6	2:0
/g/	3:6 female; 4:0 male	2:0

### *Fricatives and Affricates*

/h, w/	3:0	before 2:0
/f, f-/	3:6	2:5
/-f, v/	5:6	4:0
/θ/	6:0 female; 8:0 male	4:5
/ð/	4:6 female; 7:0 male	5:0
/s, z/	7:0-9:0* (*Distortions)	3:0, 3:5
/ʃ, tʃ, dʒ/	6:0 female; 7:0 male	3:5

### *Glides and Liquids*

/j/	4:0 female; 5:0 male	4:0
/l, l-/	5:0 female; 6:0 male	3:0
/r, r-/	8:0	3:0

### *Clusters-Word Initial*

/fw, bw, pw/	none ambient in English	2:0
/tw, kw/	4:0 female; 5:6 male	3:6
/pl, bl, kl, gl, fl/	5:6 female; 6:0 male	4:0-5-6
/sp, st, sk, sl/	7:0-9:0	4:0-5:0
/sm, sn, sw/	7:0-9:0	4:6-5:6
/skw, spl, spr, str, skr/	7:0-9:0	4:6-8:0
/θr/	9:0	7:0

## Phonological Processes

The simplification strategies children use when producing words are known as phonological processes. There are normally occurring strategies. Children gradually decrease the use of phonological processes as they are able to use more consonant and consonant clusters correctly in words.

### Phonological Processes from 2:0 to 5:0- years (Age of Suppression)

Initial Consonant Voicing	<3:0
Assimilations	<3:0
Reduplication	<3:0
Consonant Harmony	<3:0
Final consonant deletion	3:0
Stopping of fricatives and affricates	3:6
Fronting of velars	4:0
Fronting of affricates	5:0
Cluster reduction (without /s/)	4:0
Cluster reduction (/s/clusters)	5:0
Weak syllable deletion	5:0
Gliding	7:0

## Intelligibility

An important factor in the acquisition of the speech sound system is the extent to which a child is understood by others. Intelligibility can be affected by articulatory, phonological, suprasegmental, and other linguistic features, thus it is important to take these aspects of linguistic development into consideration. Intelligibility is also affected by the child's relationship to the listener (Flipsen, 1995). Data from several research studies yielded the following information (Roulstone, Loader, Northsone, & Beveridge, 2002; Flipsen, 2006).



Age	Intelligibility		
2:0	parents 87% strangers 50%		
2:6	51-70%		
3:0	71-80%	75%	reliable transcription 95.7%
4:0		100%	reliable transcription 96.8%
5:0			reliable transcription 98%

Several sources were used to develop this document:

- Creaghead, N.A., Newman, P.W., & Secord, W.A. (1989). Assessment and remediation of articulatory and phonological disorders, 2<sup>nd</sup> Edition. New York, NY: Macmillan Publishing Co.
- Dyson, A.T. (1988). Phonetic inventories of 2- and 3-year-old children. *Journal of Speech and Hearing Disorders*, 53, 89-93.
- Flipsen, P., Jr., (2006). Measuring the intelligibility of conversational speech in children. *Clinical Linguistics and Phonetics*, 20(4), 303-312.
- McLeod, S., van Doorn, J., Reed, V.A. (2001). Normal acquisition of consonant clusters. *American Journal of Speech-Language Pathology*, 10, 99-110.
- Preisser, D.A., Hodson, B.W., & Paden, E.P. (1988). Developmental phonology: 18-29 months. *Journal of Speech and Hearing Disorders*, 53, 125-130.
- Roulstone, S., Loader, S., Northstone, K., & Beveridge, M. (2002). The speech and language of children aged 25 months: Descriptive data from the Avon longitudinal study of parents and children. *Early Child Development and Care*, 172, 259-268.
- Smit, A.B. (2004). Articulation and phonology resource guide for school-age children and adults. Clifton Park, New Jersey: Thomson Delmar Learning.
- Stoel-Gammon, C. (1985). Phonetic inventories, 15-24 months: A longitudinal study. *Journal of Speech and Hearing Research*, 28, 505-512.

## Articulation and Phonological Developmental Considerations

This information is intended to provide speech-language pathologists with developmental guidelines for articulation and phonology. Several factors should be taken into consideration when using developmental information to make decisions about the sound system of children, including chronological age, developmental age, motor development, opportunities to develop spoken language, and cultural and linguistic background.

### Acquisition of English Consonants

Interpreting data about the ages when children acquire English consonants requires consideration of two important concepts. Most charts represent the *mastery* of phonemes when 90% of the subjects in developmental studies use the phonemes in two or three word positions. Thus ages of mastery are at the high end of the continuum of development of speech sounds. In contrast, information about the gradual attainment of speech sounds is also helpful as we assess toddlers and preschoolers. Development across time is important for our understanding of the *emergence* of the sound system during this period and to help us identify when the system is not emerging within typical time periods. Both mastery and emergence information are included here to assist SLPs in decisions about whether the sound system of English is developing in a typical fashion for children from the ages of 2 to 9 years.

### Emergence of Phonemes (Based on Prather et. al, 1975; Sander, 1972; Stoel-Gammon, 1985)

#### Singletons:

Children develop phonemes gradually between 15 and 24 months of age. By 24 months, at least 50 percent of 34 subjects (Stoel-Gammon, 1985) used the following phonemes with 70% accuracy:

- /h, w, b, t, d, m, n, k, g, f, s/ initial position of words
- /p, t, k, n, r, s/ final position of words

#### Consonant clusters:

Consonant clusters emerge along with singleton phonemes. As early as 2 years children use a limited number of clusters in the final position.

#### Vowels:

English vowels emerge very early and complete mastery is typical by age 3:0 including the central /r/ - colored /æ/ and diphthongs.

## Mastery of Phonemes (Summarized from Smit, Hand, Frelinger, Bernthal, and Bird, 1990)

### Singletons:

Age	Phoneme
3:0	/m/, /n/, /h/, /p/, /b/, /d/, /w/ initial
3:6	/k/, /g/ /f/ initial, /t/
4:0	/j/
4:6	/θ/
5:0	/l/ initial
5:6	/f/ final, /v/,
6:0	/ð/, /ʃ/, /tʃ/, /dʒ/, /l/ final
7:0 – 9:0	/s/, /z/
8:0	/r/, /ʒ/

Note: A 6 to 12 month difference has been found in mastery of phonemes between male and female children for the following sounds:

- Females: /n/ 3:6; /t/ 4:0
- Males: /j/ 5:0; /d/ 3:6; /g/ 4:0; /θ/ 8:0; /ð/ 7:0; /ʃ, tʃ, dʒ, l final/ 7:0

Two and three segment consonant clusters are mastered between the ages of 5:6 and 9:0 with most initial clusters mastered between 7:0 and 9:0. Clusters mastered early than 7:0 include:

- /tw, kw/ 4:0 - 5:6
- /pl, bl, kl, gl, fl/ 5:6 – 6:0

Clusters mastered after 7:0 include:

- /s/ clusters /sp, st, sk, sm, sn, sw, sl, skw, spl, spr, str, skr/
- /r/ clusters /pr, br, dr, kr, gr, fr, θr/

### Phonological Processes (Based on Bauman-Waengler, 2008; Smit, 2004)

*Syllable structure processes* are the result of the general tendency of children to simplify words to basic consonant-vowel (CV) structures. Children use these simplification strategies between the ages of 1:6 and 4:0. There is a wide range of suppression of some processes involving consonant clusters with three elements.

- Reduplication: Suppressed after the first 50 words
- Final Consonant Deletion: Suppressed prior to age 3:0
- Unstressed Syllable Deletion: Suppressed between 2:0 and 4:0
- Cluster Reduction/Substitution: Suppressed gradually between 3:0 and 9:0
- Epenthesis: Suppression between 2:6 and 8:0

*Substitution Processes* occur when children use one or more phonemes in place of other phonemes. These processes are suppressed depending on the phonemes involved and range from age 3:0 to age 5:0.

- Stopping of fricatives and affricates /f, v, s, z, ʃ, tʃ/ 3:0 to 3:6; /dʒ/ 4:0; /θ, ð/ 5:0
- Fronting: Suppressed by 3:6
- Gliding of /r/ and /l/ suppressed between 5:0 and 7:0 years

*Assimilation Processes* most often occur on velar and bilabial consonants. They are suppressed by 1:6 to 2:0 years.

## References

- Bauman-Waengler, J. (2008). *Articulatory and phonological impairments: A clinical focus* (3<sup>rd</sup> Edition). Boston: Pearson Allyn & Bacon.
- Prather, E.M., Hedrick, D., & Kern, C. (1975). Articulation development in children ages two to four years, *Journal of Speech and Hearing Disorders*, 40, 179-191.
- Sander, E. K. (1972). When are speech sounds learned? *Journal of Speech and Hearing Disorders*, 37, 55-63.
- Smit, A.B. (2004). *Articulation and phonology resource guide for school-age children and adults*. Clifton Park, New Jersey: Thompson Delmar Learning.
- Smit, A.B., Hand, L., Freilinger, J., Bernthal, J., & Bird, A. (1990). The Iowa articulation norms project and its Nebraska replication. *Journal of Speech and Hearing Disorders*, 55, 779-798.
- Stoel-Gammon, 1985

